AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings include changes to Figs. 1 and 3-5. These sheets, which include Figs. 1 and 3-5, replace the original sheets including Figs. 1 and 3-5.

Attachment: Replacement Sheets for Figs. 1 and 3-5

REMARKS

This submission is in response to the Official Action dated March 25, 2005. Claims 6, 8, and 11 have been amended. Claims 13-17 have been added. No new matter is added. Claims 1-17 are presently pending. Claims 6-9, 11, and 12 stand rejected. Reconsideration of the above identified application, in view of the above amendments and the following remarks, is respectfully requested.

The Specification and Drawings have been amended to correct typographical errors. Specifically, Fig. 1 and the Specification have been amended to replace "intertial sensor" with "inertial sensor." Fig. 1 has also been amended to replace "takoff command" with "takeoff command." Figs. 3-5 have been amended to replace "rudder angle" with "blade angle."

Acknowledgement of Allowable Subject Matter

Applicant thanks the Examiner for the acknowledgement of allowable subject matter in claims 1-5 and 10.

Telephone Interview

Applicant thanks Examiner Eldred for all of the courtesies extended in the telephone interview held on April 25, 2005, with Denise L. Poy. Applicant also thanks the Examiner for discussing the rejection of the claims and new claim language.

Claim Rejection

Claims 6-9, 11, and 12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,527,225 to Kendall, Jr., et al. ("Kendall") in view of the Examiner's statement of ordinary skill in the art. Applicant respectfully traverses this rejection for the reasons set forth below.

Kendall Jr. discloses remote control of a robot aircraft. In a first step of the take-off, the helicopter leaves the ground and is held at a position above the ground (Kendall Jr., column 41,

lines 14-17). In a second step, the helicopter moves forward (Kendall Jr., column 41, lines 27-35). Altitude control is established by a remote operator or by including a means for sensing the altitude and automatically creating a signal whenever the helicopter deviates from a selected altitude (Kendall Jr., column 21, lines 21-25). In a first step of the landing, the air speed of the helicopter gradually decreases until the helicopter hovers steadily over the landing spot (Kendall Jr., column 42, lines 10-12). In a second step of the landing, the collective pitch is reduced and the helicopter settles gradually to the ground (Kendall Jr., column 42, lines 12-14).

The Examiner acknowledges that Kendall does not disclose increasing a climb rate by increasing a collective pitch blade angle command at a constant rate, but states that it would be counter-intuitive for a pilot to not increase the climb rate smoothly.

The Examiner also acknowledges that Kendall does not disclose "a first descending step of stepwise decreasing a descent rate" during landing, but states that there is no unexpected or patentable result that is provided by descending more slowly when close to the ground since exercising normal caution would lead to this result.

The present invention is directed to a control system for allowing an unmanned helicopter to be "autonomously controlled," as set forth in the amended claims and described in page 4, lines 16-18, of the Specification. Claims 6, 8, and 11 have been amended to state that the takeoff and landing methods are autonomous and that the helicopter is autonomously controlled.

During the autonomous takeoff method set forth in claims 6 and 11, the climb rate is increased at a constant rate using the takeoff control program. Therefore, the airframe is brought away from the ground as soon as possible after takeoff and the attitude of the airframe can be stabilized more quickly (page 2, lines 4-18, and page 21, lines 6-13, of the Specification). During the autonomous landing method set forth in claim 8, the descent rate is decreased in a stepwise fashion. Thus, as the landing program is executed, the descending speed can be lessened sufficiently to ensure a safe landing (page 24, line 23, to page 25, line 1, of the Specification).

Kendall discloses using a remote control for controlling a helicopter during its takeoff and landing. Therefore, Kendall does not teach or suggest autonomous takeoff and landing methods wherein a helicopter is autonomously controlled. Furthermore, the Specification states that in the flight control systems of the prior art, "when an airframe takes off the ground or is landed, radio remote control operation of a ground operator is required; a flight control system for making a completely autonomous flight from takeoff to landing is not yet in the actual use as things stand now" (page 1, lines 20-25, of the Specification). Thus, Kendall in view of the Examiner's statement of ordinary skill in the art does not disclose all of the features of claims 6, 8, and 11. Claims 7, 9, and 12 depend on claims 6, 8, and 11 and are patentable for at least the same reasons.

Based on the foregoing, the rejection of claims 6-9, 11, and 12 under 35 U.S.C. § 103(a) should be withdrawn, and reconsideration is respectfully requested.

For the reasons discussed above, we believe claims 6-9, 11, and 12 to be patentable over the applied references.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated: July 25, 2005

Respectfully submitted,

By

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